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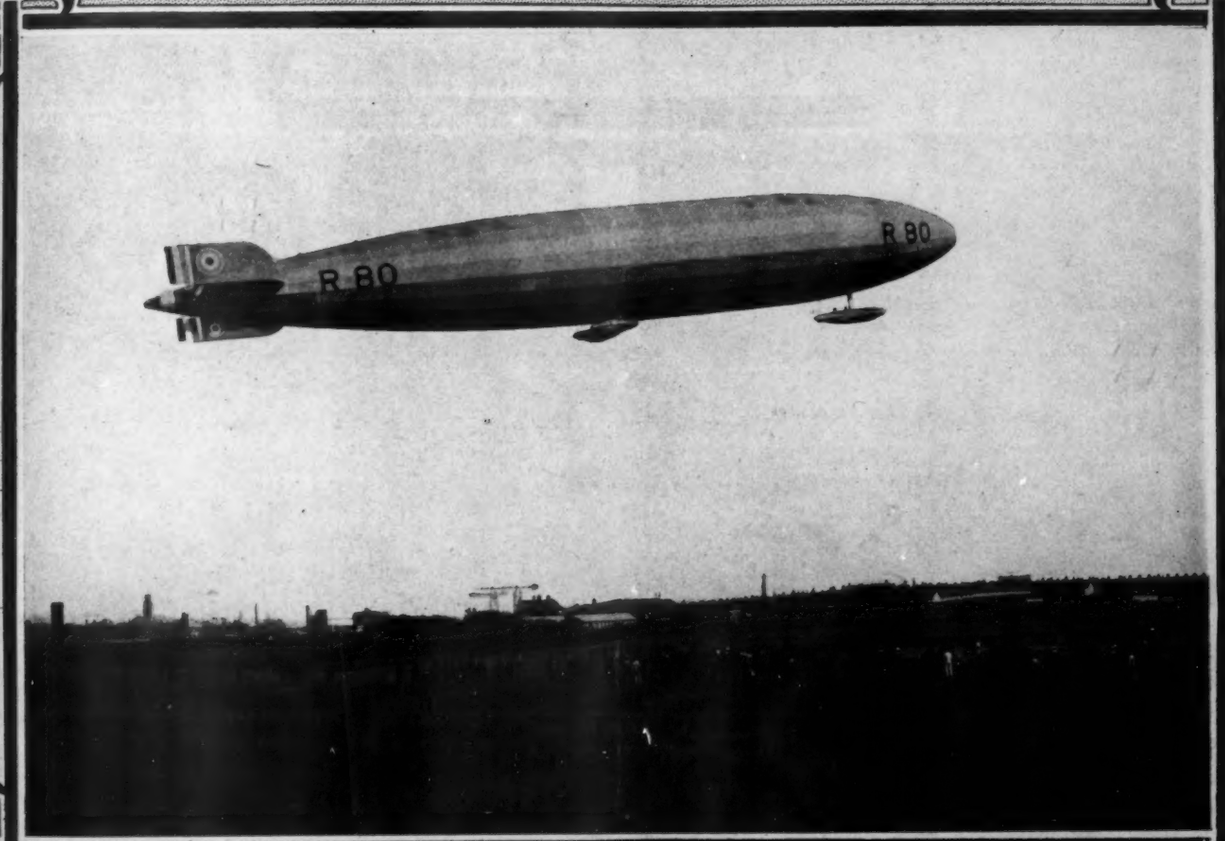

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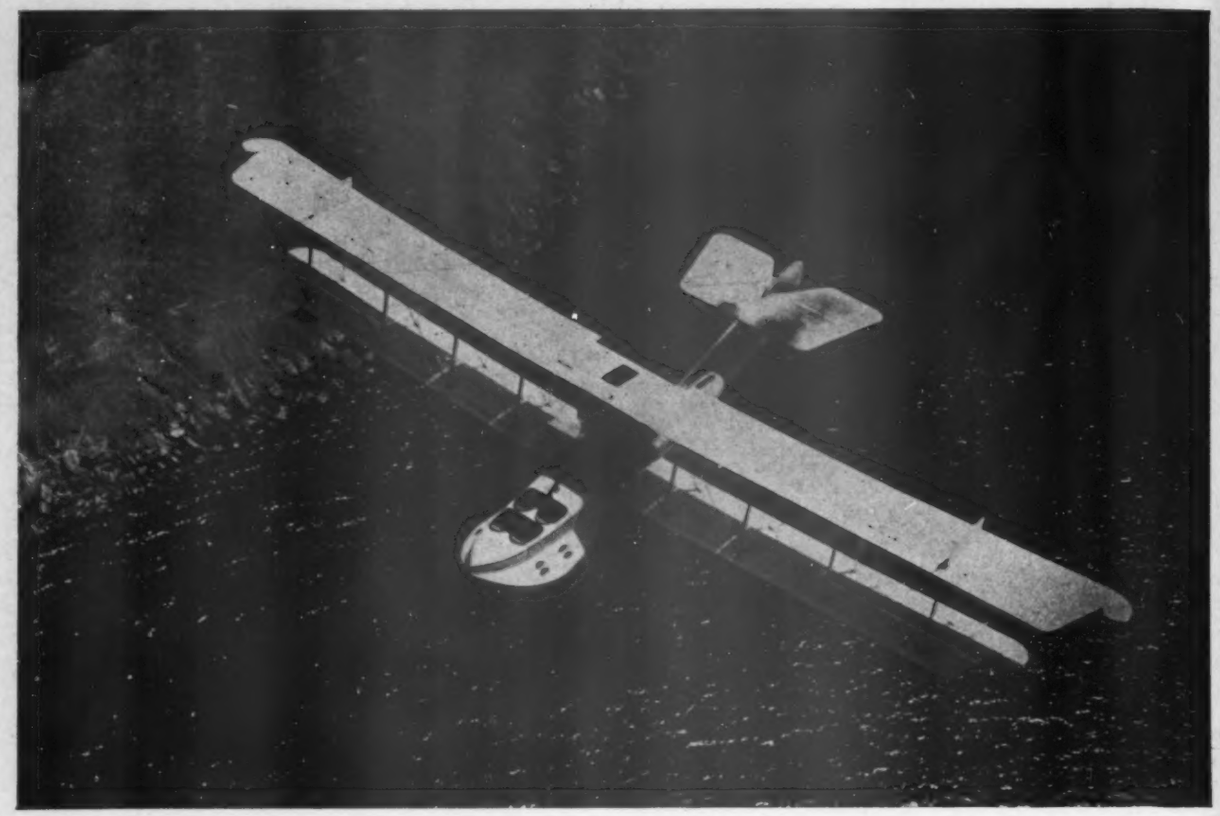

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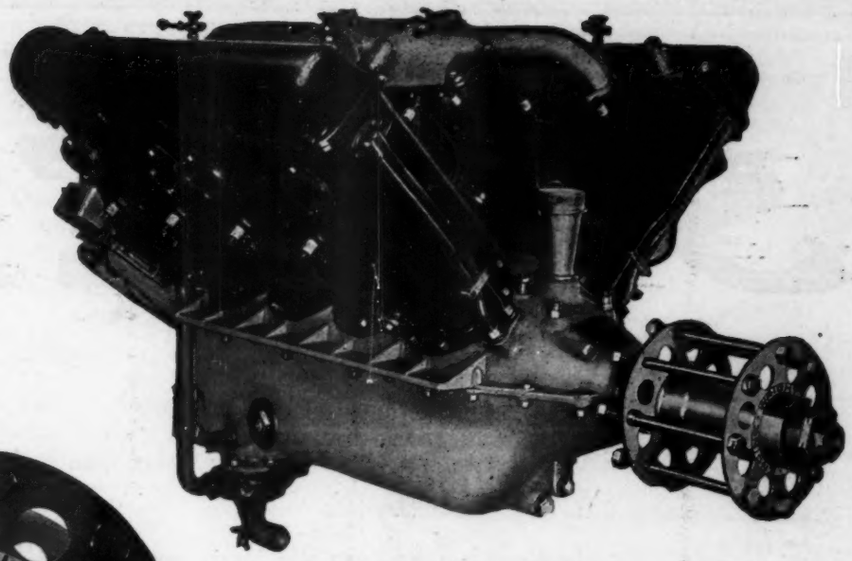

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AUGUST 29, 1921 VOL. XI. NO. 9

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INDEX TO CONTENTS

Editorials	247	Underwriters' Aircraft Certificates	256
Loening Flying Yacht	248	Air Service R.O.T.C. Camp	258
Naval Bureau of Aeronautics	251	A New French Contemporary	258
New Aircraft Concern	252	New York Aviators Support La Guardia	258
New Courses in Aeronautics	252	Manufacturers' Aircraft Ass'n Officers	259
Colorado Aero Meet	252	Reserve Unit	259
Wright Co. Dividend	252	Langley Field Inspection	259
Who's Who in American Aeronautics	253	Pueblo Flood Photographs	259
Flight Through The Grand Canyon	255	Air Seasoning Wood	260
Bombs or Torpedoes	256	New Air Transport Company	260
"Santa Maria" at Chicago	256	Air Service Designations	260
Aeromarine at Traverse City	256	Forest Fire Patrols	260

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LADISLAS D'ORCY, EDITOR
ALEXANDER KLEMIN
EDWARD P. WARNER
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Vol. XI AUGUST 29, 1921 No. 9

Safety in Aviation

ANYTHING that is practical can always be made safe by proper management and regulation. Aviation is no exception to this, but just as the careful automobile driver is endangered by the mistakes of others, so in aviation individual precautions are insufficient without a uniform and intelligent regulation of all air traffic.

Nearly every motorist has at some time or other felt the inconvenience and futility of special local laws governing the use of automobiles, even though fully 90 per cent of all automobile traffic is local in character. Considering that the great bulk of commercial aviation must be for inter-city travel, uncoordinated local regulations for aircraft are more apt to hinder than to help. The need for some measure of national control, therefore, is urgent and puts a big responsibility on the recently appointed "Aeronautic Safety Code Committee" sponsored by the U. S. Bureau of Standards and the Society of Automotive Engineers.

Although detailed legislation must of necessity be the result of study and care, it seems not too soon to express some of the general aims that such regulation should fulfill.

Standards should be provided by which to judge the structural safety and airworthiness of a machine and, at the same time, not unduly retard research work and the development of experimental types of machines.

Similarly air transport should be restricted sufficiently to guarantee safety but not so much as to hinder its development and expansion.

Coordination with existing laws of other nations should be made as close as possible.

In everything that is done it should be realized that aviation is still in a stage of rapid development and consequently the greatest factor in its success will be the character and ability of the men actively associated with it.

The Disappearance of the Aeronautical Engineer

BARELY three years ago, there had come a unanimous realization in this country that the fundamental problem in the design and prediction of airplanes is that of technical direction and that, in any country, an aircraft industry in war or in peace can grow up only around a well-trained, up-to-date, and enthusiastic aeronautical engineering profession. On the heels of that realization followed attempts to increase the corps of aeronautical engineers in the United States by special schools for their training and by encouraging all those who had any bent for aeronautics to take up such studies.

Today, however, the aeronautical engineering profession has again fallen off, so far as superficial indications go, to a few men connected with airplane companies and a very few others engaged in consulting work or in teaching. Of the scores and hundreds of men trained during the war in one or many more phases of the art, nearly all have drifted away and there appears to exist no means of keeping in touch with them or of calling into national service again with a maximum of efficiency and minimum of delay should the need arise. To take a single concrete illustration, about 80 Army and Navy officers were graduated, on the completion of a thorough intensive course in aeronautical engineering principles, from a series of schools run at the Massachusetts Institute of Technology during the war. Of these picked men barely a score now remain in the governmental service or in any connections with aeronautics. While it is not to be expected that the industry under peace conditions can support so large a body of engineers as in times of national emergency, it is at least essential that men with such training should be registered and kept enrolled for special service as far as possible, and that they should be encouraged to keep up their aeronautical studies in some degree and to keep in touch with modern developments. Such papers on current development as have been presented by Major Bane and others to the Society of Automotive Engineers and the American Society of Mechanical Engineers are an excellent step in this direction and no effort should be spared to see that all such material is kept before those whose war-time training will enable them at least to read it profitably and understandingly.

Another Original American Design

IF any further proof were needed of the assertion that American aircraft designers, given a fighting chance—which mainly means continuing government orders—can produce machines second to none built abroad and often a whit better, the new Loening seaplane may be taken as an example.

Here is a flying boat of original American design whose performance equals if it does not exceed that of many a European land machine of the same carrying capacity. This is an achievement which should make Americans appreciate the position our engineers are holding in aeronautics.

International Seaplane Records

IN connection with the altitude record which was established by the Loening Model 23 flying boat it will surprise most of our readers to learn that the International Aeronautical Federation does not recognize records made by seaplanes as distinct from land machines. The reason for this attitude is not very clear. Seaplanes, particularly flying boats, differ from land machines very considerably in structure as well as in performance, so that it seems rather unfair to include them in the general class of airplanes.

We understand that the delegates of the Aero Club of America intend to bring up this point at the next annual convention of the F.A.I.

The Loening Model 23 Flying Yacht

Reaches 19,500 *Ft. Altitude with Four on Board*

The latest product of the American aircraft industry, the Loening Model 23 flying yacht, made its first public appearance on August 16, at Port Washington, Long Island, when it reached an altitude of 19,500 ft., establishing a new world's record for seaplanes carrying pilot and three passengers. The machine was piloted by David McCulloch, formerly Commander, U.S.N., and pilot of the NC-3 during the American transatlantic flight, and carried as passengers Grover C. Loening, designer of the new flying boat, L. R. Grumman and Ladislas d'Orey, editor of AVIATION AND AIRCRAFT JOURNAL. The latter acted as flying observer for the Contest Committee of the Aero Club of America, while Caleb S. Bragg, chairman of the committee, and Maurice Cleary, governing director of the club, acted as ground observers. The barographs which were carried during the flight will be officially tested by the Bureau of Standards for certification of the record with the International Aeronautical Federation. As the previous record for this class of machines stood at 9,600 ft. there can be no doubt that it has been very largely exceeded by the performance of the Loening Model 23.

FRONT VIEW OF THE LOENING MODEL 23 SEAPLANE MANEUVERING OFF PORT WASHINGTON, LONG ISLAND

Among those who witnessed the test were Representative Frederick C. Hicks, of Port Washington; Albert P. Loening; Charles L. Lawrence; Lt. Comdr. J. A. Davis, U.S.N., of the Bureau of Aeronautical Engineering; Commander Cabaniss, U.S.N., in charge of the U.S.S. Langley, the new aircraft carrier; Commander Leighton, U. S. N.; Augustus Post, secretary of the Aero Club of America; James B. Taylor, George Newbold and Cole Younger.

Particulars of the Flight

The weather was ideal for the test, the sky being clear up to high altitudes, with a light breeze blowing. At noon the flying yacht was let down the slip from the hangar in which it was sheltered and the appointed crew went on board. After the sealed barographs had been put on board, Pilot McCulloch started the Liberty engine with a self starter—which worked—and soon the seaplane was under way, taxiing into the wind. It was noticeable that the machine rode the sea easily, there being no porpoising whatever, and also that the cockpit effectually protected the crew against the spray created on gathering speed. The take-off occurred after a short run, and after circling once over the bay, Pilot McCulloch started climbing in wide curves. As the earth receded more and more, the details of the various islands and inlets of the Sound stood out with remarkable clearness, their contours appearing like on a topographical map.

At 6000 ft. the air became somewhat bumpy and it was gratifying to note how promptly the machine answered the controls, for it reacted much more like a high performance two-seater than in the manner generally associated with flying boats. Within the next thousand feet the bumpiness disappeared, and from then on until the peak of the climb was reached the air was absolutely smooth. At 14,000 ft. some of the crew became aware of the fact that the temperature had dropped quite appreciably and wondered how much higher the pilot would go. The reply came in the form of a look the pilot directed toward Mr. Grumman, who thereupon extracted from his pocket a strip of rubber and placed it against the radiator, where it was held fast by the air pressure. As the radiator was not fitted with a shutter arrangement, it was necessary to use this emergency method to prevent the engine from being chilled. The accessibility of the engine in flight was thus well demonstrated and so was the pilot's intention to continue his climb. The details of the ground became smaller and smaller, the temperature colder, and more rubber strips were put against the radiator. The three passengers, who were much less warmly clad than the pilot grimly determined to stick it out—for there were no parachutes on board. They were by the way fortunate in having the propeller at their back and in the ample cockpit in which they were sitting, else the experience might have been much more uncomfortable.

Maximum Altitude

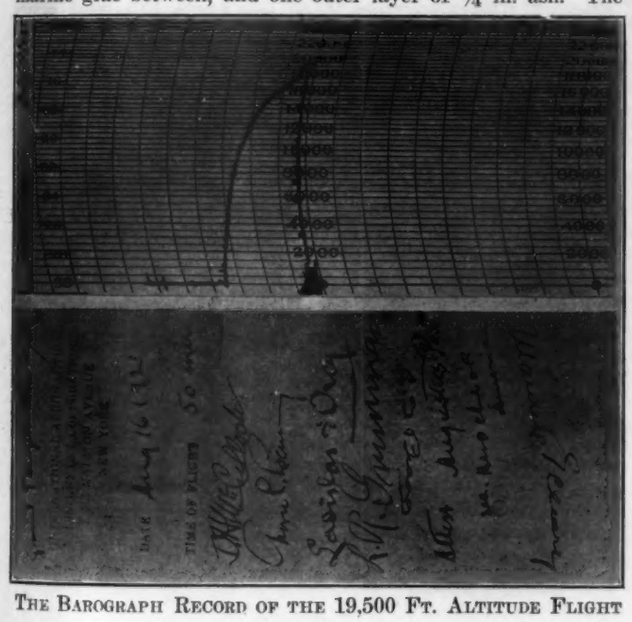
Finally when the needle of the barograph registered an altitude of over 19,500 ft., Pilot McCulloch turned toward the half frozen crew and with a charming smile nodded his head as if to say, "Well, that's that". And being apparently satisfied with the altitude reached he pushed the nose of the machine down. Although the cold air at the high altitude reached did not tempt the crew to engage in much ground gazing, their main object of interest being the altitude registered by the barograph, such glimpses as were sent downward showed an extremely clear atmosphere, in which the least details stood out with great sharpness. The peak of the climb was reached in 48 min. and the air speed during the climb was about 85 m.p.h.

The descent was made at a rather rapid rate, for a few minutes later Pilot McCulloch came in over the Port Washington hangars and gave those assembled to watch the test an idea of the behavior of the machine by diving within a few feet of the water and then pulling up sharply and putting her into a healthy climb. After a few more circles over the bay the Loening seaplane alighted on the water in a remarkably smooth fashion, no bumping being noticeable from the cockpit, and ran to her mooring buoy, where she was made fast by the crew. The substantial deck running from the bow to either side of the cockpit made this a simple maneuver.

Description of the Loening M.23 Flying Yacht

As may be seen from the annexed outline drawings and illustrations, the Loening Model 23 Flying Yacht is a monoplane pusher flying boat. It is of the long hull type, as distinct from the short hull or bat boat type represented by the NC and the Vought VE-10 seaplanes, but it differs from the accepted idea of flying boat hulls in one fundamental point. The flotation system comprises a completely sealed unit, or pontoon, which is independent of the cockpit, the latter being built up in the form of a superstructure on the pontoon. This arrangement effectually prevents the flotation system from losing a portion of its buoyancy through the shipping of water when the machine is taxiing, while on the other hand the cockpit is raised sufficiently high over the pontoon to give the crew ample protection against spray. There is still another advantage to this type of construction in that, given the same displacement required to float a machine, the sealed hull can be made much stronger, or lighter, than could be achieved in a hull affording accommodation to the crew, because in the latter the hull structure must have a much larger volume. Briefly, the Loening flying boat design may be considered as an ingenious compromise between boat and float type seaplanes, for it incorporates the low resistance of flying boats owing to the absence of parasite structures between wings and floats, while on the other hand it retains the main advantages of float seaplanes, namely, that the flotation system is unsinkable short of a collision with drift wood or running on a rock.

The pontoon is of very sturdy construction, the bottom planking consisting of two-ply spruce, with fabric laid in marine glue between, and one outer layer of ¼ in. ash. The



THE BAROGRAPH RECORD OF THE 19,500 FT. ALTITUDE FLIGHT

total thickness of the bottom throughout its length is ½ in. The sides and top are of ¼ in. mahogany veneer. The framework is of spruce and the pontoon is internally braced by a triple truss with cross wires which in itself will take the tail load without the assistance of the planking. The pontoon has a 21 deg. V bottom throughout its entire length, including the tail section, and is fitted with a single step. All the planking is bolted together to do away with the risk of screws or rivets pulling out under the strain.

As may be seen from the outline drawings, in plan view, the pontoon has the same width from aft of the engine to the tail, an arrangement which was adopted with the particular view to overcoming porpoising and which the tests have proved to be justified.

The pontoon is subdivided into sixteen water-tight compartments, each being provided with its individual hand hole and ventilating tubes. Incidentally, for the altitude flight a 1/16 in. hole had been made in each hand hole to prevent the pontoon from "blowing up" owing to difference in atmospheric pressure that would prevail inside and outside of the hull at high altitudes.

The wings are the standard structure adopted by the Loening Aeronautical Engineering Corp. for their new Model 21 fighting monoplane developed for the Army Air Service. The wing pontoons are supported by vertical three-ply struts built integral with the structure and are braced by additional struts against side swiping. The weight of the wing structure complete is 290 lb.

The engine, a 400 hp. Liberty fitted with a 4-bladed Hartzell propeller, rests on two ash bearers which are supported on two M struts built integral with the pontoon. The space

DAVE MCCULLOCH, WHO PILOTED THE LOENING MODEL 23 SEAPLANE ON ITS RECORD BREAKING FLIGHT

available between the arms of the M struts is made use of for housing the gasoline and oil tanks, which are under pressure. The whole structure is carefully streamlined, the cowling blending into the rear portion of the cockpit.

The cockpit has accommodations for five persons, two, including the pilot, sitting forward on individual seats, while three are seated aft. Ample leg room is provided for, and there is a general air of roominess about the cockpit which should strongly appeal to the owner pilot or to the amateur owner flying with a private pilot. Access is had through a side door which opens onto a running board making a circle around the nose of the machine, a provision which makes it easy to take on and put off passengers without fear of the latter falling over board. A 57 lb. anchor is carried on the bow to permit mooring where no buoys are available.

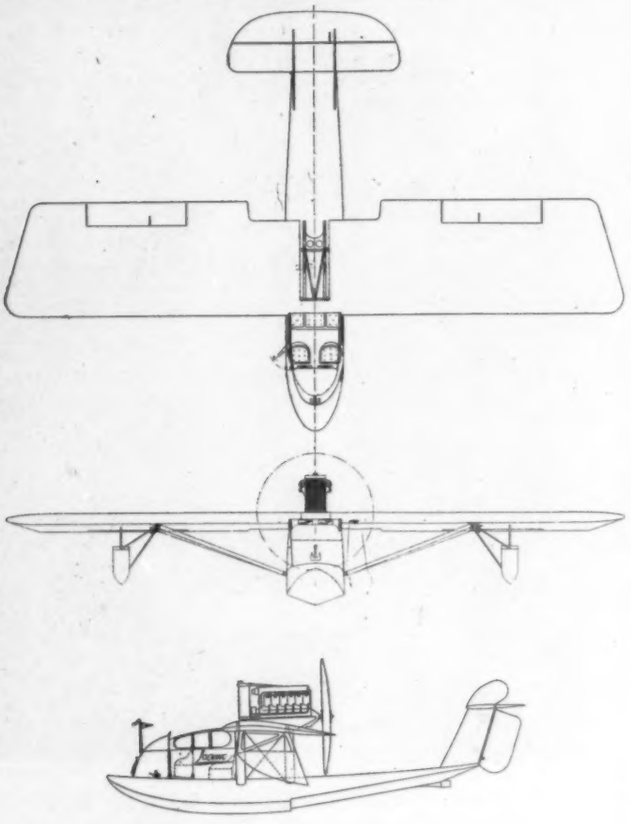
From the cockpit the engine and the square honeycomb radiator are very accessible in flight, for all the mechanic has to do to look the engine over is to stand up on his seat, which owing to the depth of the cockpit is not the risky thing it may sound like.

The sides of the cockpit are a ¼ in. veneer framework with aluminum covering, which is bolted onto the pontoon. Two individual wind shields are provided for the pilot and the passenger sitting abreast with him. On the nose of the fuselage a small staff carries a metal pennant which answers the

purpose of a side-slip indicator. It may be said in passing that this gadget is the oldest known aeronautical instrument, for it descends directly from the famous "string" of the early Wright Model B biplane (1911) which for long years was affectionately known to all Wright pilots. In the days when air speed indicators, drift and banking indicators, and so forth still remained in the realm of pious desires, the Wright "string" played a very important role indeed.

The tail unit of the Loening Model 23 consists of two parallel vertical fins mounted on the outer corners of the pontoon—which form the entire bracing of the unit—on top of which is mounted a one-piece stabilizer and two skid fins. A one-piece elevator and two rudders, all non-balanced, are hinged to the stabilizer and vertical fins, respectively.

The horizontal stabilizer is adjustable as to incidence by means of a hand wheel fitted in the cockpit.



OUTLINE DRAWINGS OF THE LOENING MODEL 23 SEAPLANE

Following are the principal specifications of the Loening Model 23 Flying Yacht:

Span, 43 ft.
Height, 8 ft.
Length, overall, 29 ft. 3 in.
Chord, 8 ft.
Incidence, 4½ deg.
Dihedral, none.
Sweepback, none.
Area of wings, incl. ailerons and wing struts, 330 sq. ft.
Area of ailerons, 22 sq. ft.
Area of stabilizer, 23.5 sq ft.
Area of elevator, 19 sq. ft.
Area of vertical fins, 24 sq. ft.
Area of rudder, 16.5 sq. ft.
Engine, Liberty 400 hp.
Propeller, Hartzell 4-bladed.
Weight dry, 2200 lb.
Useful load, 1350 lb.
Weight loaded, 3550 lb.
Maximum speed, appr. 125 m.p.h. at 1700 r.p.m.
Cruising speed, 110 m.p.h. at 1500 r.p.m.
Climb, 9500 ft. in 10 min.
Wing loading, 10.7 lb./sq. ft.
Power loading, 8.5 lb./hp.
Safety factor, 8.9.

A Historical Retrospect

The Loening Model 23 Flying Yacht represents the culmination of the efforts Grover C. Loening has, with numerous interruptions, pursued these last ten years with a view to producing a flying boat that would be both airworthy and seaworthy. His earliest experiments along this line of thought date back to the fall of 1911, when he built a machine remarkably similar in general outline to his Model 23. That early forerunner had Bleriot XI monoplane wings of 28 ft. span and 6 ft. chord, a composite wood and canvas pontoon, and a Breguet type cruciform tail. The engine, a 7-cyl. 50 hp. Gnome rotary, whose effective horsepower was about 30, was mounted on top of the hull and actuated a pusher propeller through a chain and sprocket drive. This machine, which weighed dry 900 lb., was tested in November, 1911, in Jamaica Bay, when short straight aways were made until the spray broke the propeller. Much trouble was experienced from inadequate motive power and also from the hull which did not prove water-tight, so that in February, 1912, the seaplane was rebuilt and lightened by substituting an aluminum hull. The weight dry was thereby reduced to 750 lb. More straightaways were accomplished in the following months at Seidler's Beach, N. J., but the unreliability of the power plant and of the transmission prevented extended flights. In May, 1912, this machine was exhibited at the New York Aero Show, where it elicited considerable interest as the flying boat type was then totally unknown. After the Show the machine again underwent some modifications, the chain drive being done away with and the engine being mounted in a raised position for direct drive. But even these changes were unable to overcome the low power and high head resistance of the machine, and thus experiments with it ended shortly afterwards.

A second model was brought out by Mr. Loening in the spring of 1913. The hull consisted of a steel framework sheathed with aluminum, while the wings had steel spars, aluminum ribs and fabric covering. The span of the wings was 40 ft. and the total supporting area 240 sq. ft. The power plant consisted of a 6-cyl. vertical 50 hp. engine built by H. M. Crane, which worked well with a flywheel. The propeller was geared to it like in the previous boat. The dry weight of the machine was 900 lb.

The first tests, in the course of which several short flights were made, seemed promising enough, when a thunderstorm surprised the machine at its mooring, at Seidler's Beach, and destroyed it before it could be saved. Mr. Loening shortly afterwards joined the Wright Co. and was instrumental in developing together with Orville Wright the Wright aeroboat that appeared in the spring of 1914. In this machine too, metal was largely used, the hull being of aluminum, although the wing structure followed orthodox Wright practice. The engine, a 6-cyl. vertical 60 hp. Wright, was mounted in the hull and drove two pusher propellers through a chain transmission. This machine had a good performance for the period in which it was built.

Thereafter Mr. Loening's aeronautical activities have chiefly centered upon developing, first in connection with the U. S. Army, then with the Sturtevant Aeroplane Co., and finally with his own company, the Loening Aeronautical Engineering Corp., high performance wing structures, of which the last in date is exemplified by the Model 21 fighting monoplane.

THE MUMMERT BIPLANE.
Photo by Underwood & Underwood

Naval Bureau of Aeronautics

By Our Washington Correspondent

The Bureau of Aeronautics of the Navy Department was established by General Order on August 10, but it will be September 1 before the organization will be functioning fully. This was the statement made today by Rear Admiral William A. Moffett, until recently the director of Naval aviation but now chief of the new bureau.

The General Order establishing the Bureau of Aeronautics was signed by Theodore Roosevelt, Acting Secretary of the Navy, and set forth in detail the functions of the organization. The order is long, necessarily, so that the aviation officers may know exactly where their authority begins and where it ends.

The issuance of the order is expected to be followed promptly by an announcement by Admiral Moffett as to the personnel who will help him in the work. In advance of the annoucement, however, it may be said that Commander W. J. Giles, formerly assistant to the director of naval areonautics, will be assistant to the director pending the official apointment of Capt. Henry C. Mustin, at present officer in charge of aircraft with the Pacific fleet.

Capt. Mustin, who at present is in Washington, assisting in the work of reorganization, will return soon to the Pacific fleet to wind up the affairs connected with his detail, and then will come back to Washington to take up his new work. The post to which Commander Giles will go has not been announced, but it is posible it will be the carrier Langley, which soon will be put in commission. Another of the officers who is expected to be detailed to the Langley is Commander Kenneth Whiting, who has been attached to the naval aviation offices in Washington. The law creating the Bureau of Aeronautics provides that the assistant to the chief of the bureau be an officer with the rank of captain.

Much detailed work remains before the Bureau of Aeronautics will be functioning fully. The order establishing it requires the other bureaus of the Navy Department which have had much to do with aviation in the past to turn over to the new organization as rapidly as possible all personnel and records which they have which bears on the subject of aeronautics. Owing to the desirability of keeping fiscal accounts in shape it is possible that certain of the activities may be allowed to proceed as at present until September 1.

Bureau to Cut Red Tape

The order establishing the bureau gives to the Naval aviation officials the freest hand they ever have had to deal with the subject of aircraft. Heretofore there were many handicaps and countless delays due to the immense amount of red tape in getting correspondence through the various other bureaus to which aviation was of little or no importance. It required a week in many instances to obtain action on trivial affairs. This, now, will be corrected by the authority extended to the Bureau under the order.

The exact office arrangement has not been announced, but it is understood that the scheme to be put into force contemplates the creation of not less than four main divisions:

1. Administration.
2. Planning.
3. Material.
4. Flight.

"When the bureau is in operation," Admiral Moffett said, "it will be possible to operate it with fewer officers and fewer clerks than under the old system. We are going into new quarters in the Navy Department building, being transferred from the second floor of the seventh wing to the second floor of the second wing.

"It will be the policy of the bureau to maintain a trained personnel at the aircraft factory in Philadelphia. This will be sufficient for the development that is required. Aircraft will be purchased, however, in the open market. The factory will not attempt production unless the aircraft manufacturers attempt to overcharge the Government for the material required."

Here is the text of the order creating the Bureau of Aeronautics, as given out by the Acting Secretary of the Navy:—

Establishment of the Bureau of Aeronautics

1. In accordance with Section 8 of the Act Making Appropriation for the Naval Service for the fiscal year ending June 30, 1922 (Public No. 35—67th Congress), there is hereby established in the Department of the Navy a *Bureau* of *Aeronautics*, which shall be charged with matters pertaining to naval aeronautics as may be prescribed by the Secretary of the Navy, and all the duties of said Bureau shall be performed under authority of the Secretary of the Navy and its orders shall be considered as emanating from him, and shall have full force and effect as such.

2. Navy Department General Order No. 19 of 5 January, 1921 is hereby cancelled and is superseded by this order.

3. The duties of the Bureau of Aeronautics shall comprise all that relates to designing, building, fitting out, and repairing naval and Marine Corps aircraft, except as hereinafter provided.

4. The Bureau of Aeronautics shall recommend to each bureau the nature and priority of experimental development and production of aeronautic material under that bureau's cognizance.

5. When designs are to be prepared for a new type of aircraft the Bureau of Aeronautics shall have duties in respect to the General Board similar to those prescribed for the Bureau of Construction and Repair in Article 402, U. S. Navy Regulations 1920, and the regulations will be amended accordingly.

6. The Bureau of Aeronautics shall make special provision in its organization to enable it to furnish the information covering all aeronautics planning, operations, and administration that may be called for by the Chief of Naval Operations.

7. The functions of the Bureau of Navigation with regard to the commissioned, warrant, and enlisted personnel, both active and reserve, on duty in connection with aeronautics shall remain as at present, with the following exceptions:—

(a) The Bureau of Aeronautics shall make recommendations to the Bureau of Navigation for the details of officers for duty in connection with aeronautics and shall make recommendations to that Bureau for the distribution in the various ratings of the enlisted personnel required for aeronautic activities.

(b) The Bureau of Aeronautics shall make recommendations to the Bureau of Navigation on all matters pertaining to aeronautic training.

8. The functions of Headquarters, U. S. Marine Corps with regard to the commissioned, warrant, and enlisted personnel of the Marine Corps, both active and reserve, on duty in connection with areonautics, shall remain as at present with the following exceptions:—

(a) The Bureau of Aeronautics shall make recommendations to the Major General Commandant, U.S.N.C., for the details of officers for duty in connection with aeronautics, including duty in the Bureau of Aeronantics, and shall make recommendations to that officer for the distribution in the various ranks of the enlisted personnel required for aeronautic activities.

(b) The Bureau of Aeronautics shall make recommendations to the Major General Commandant, U.S.N.C., on all matters pertaining to aeronautic training.

9. The functions of the Bureau of Supplies and Accounts as a central contracting, procuring, storing, issuing, shipping, and accounting agency, will be performed for the Bureau of Aeronautics in the same manner as they are performed for other bureaus of the Navy Department.

10. The Bureau of Construction and Repair shall have cognizance of all aeronautic accessories that are an integral part of the structure of any surface or sub-surface vessel, but their design and installation shall be satisfactory to the Bureau of

Aeronautics. Test and Experiment Stations now under the Bureau of Construction and Repair which are equipped to perform other kinds of experimental and test work beside aeronautic work shall remain under their present cognizance, but aeronautic tests and experiments within the capacity of those plants shall be made in accordance with requests of the Bureau of Aeronautics.

11. The Bureau of Engineering shall have cognizance of all matters relating to the design, manufacture, installation, maintenance, repair, and operation of aircraft radio installations and radio installations installed on surface and sub-surface vessels primarily for aeronautical use; but their design and installation shall be satisfactory to the Bureau of Aeronautics. Test and Experiment Stations now under the Bureau of Engineering, which are equipped to perform other kinds of experimental and test work besides aeronautic work, shall remain under their present cognizance, but aeronautic tests and experiments within the capacity of those plants shall be made in accordance with requests of the Bureau of Aeronautics.

12. The Bureau of Ordnance shall have cognizance of all matters pertaining to aeronautic ordnance design and production, but all designs, specifications, and tests of such material shall be determined after consultation with and according to the requirements of the Bureau of Aeronautics. The installation of all ordnance material in aircraft and all final tests of aeronautic ordnance material in the air will be under the direct cognizance of the Bureau of Aeronautics.

13. The Bureau of Yards and Docks shall have cognizance of the design and construction of public works and public utilities at aeronautic shore establishments, but all requirements in connection therewith shall be subject to the approval of the Bureau of Aeronautics. Repairs of public works and public utilities at aeronautic shore establishments within the capacity of the force employed, as well as their upkeep and operation, shall be under the cognizance of the Bureau of Aeronautics.

14. The Bureau of Navigation shall have cognizance of all aircraft compasses and instruments for aerial navigation, ground instruments used in connection with air navigation and the aerological instruments at Naval air stations; but the design, type, and installation of this material shall be satisfactory to the Bureau of Aeronautics.

15. The Bureau of Aeronautics shall have cognizance over the policy of the upkeep and operation of the following naval aeronautic establishments:

(a) Naval Aircraft Factories

(b) Naval Aeronautic Experimental Stations

(c) Helium Plants, in so far as they come under Naval cognizance.

16. The necessary steps shall be taken promptly by the various Bureaus and offices of the Navy Department and Marine Corps, affected by the terms of this order, to turn over to the Bureau of Aeronautics, after consultation with the Chief of that Bureau, the officer, civilian, technical, clerical, and messenger personnel together with the necessary records, equipment, and facilities now assigned for aeronautic work under their cognizance.

THEODORE ROOSEVELT
Acting Secretary of the Navy.

A New Aircraft Concern

The American Aircraft, Inc., of Baltimore was recently organized for the purpose of manufacturing, assembling, and distributing standard and custom built aircraft, specializing in the "Canuck" and OX5 motors.

The company also maintains a department of operations embracing all the branches of commercial aviation, the department being in charge of experienced pilots.

The aerodrome is situated at Logan Field, Md., five miles southeast of Baltimore. The plant and stores are situated at Dundalk, Md., a short distance from Logan Field.

All the personnel of the organization are among Maryland's pioneers in aviation. The officials of the company are Robert J. Stewart, president and treasurer, George O. Blome, secretary. The directors are F. G. Ericson, R. J. Stewart, G. O. Blome, W. H. Cambell, B. Gordon.

Two New Courses in Aeronautics

In cooperation with the divisions of the Air Service of the United States Government, Research University at Washington, D. C., will start a course on September 19 in Aviation. This will be one of the most thoroughly conducted schools in the country and will help to make of aviation a profession. Leading experts in the Army Air Service, the Navy Air Service, and the Air Mail division of the United States Post Office will coooperate in planning, and administering, and teaching courses in the new school.

Research University School of Aeronautics will meet all requirements of the government and will obtain the use of airplanes and other means and methods of instruction. Each branch of the Air Service has flying fields, machines, photographs, and other practical illustrations of modern flying methods in war and commerce.

President Rapeer stated recently that the new school will open with instruction in Aerial Navigation, Airplane Engines, and airplane Construction. Some of the most expert ground school instructors in aviation during the war will cooperate to teach these classes.

The school of Aviation is in the College of Commerce. Persons who are interested in the school either for correspondence or residence study should write to President Louis W. Rapeer, 20 Jackson Place, Washington, D. C.

Feeling confident that Detroit will eventually become an aircraft and an aircraft equipment center and that the demand for men trained in aerial science will become greater as time goes on, the University of Detroit is formulating plans for the establishment of a 5-year course in aeronautics.

In the opinion of Lieut. Thomas F. Dunn, dean of the new Department of Aeronautics at the University, who was interviewed on the new course, there are two ways of getting an aeronautical education, one to go up in the air and gather some experience, and, if spared for future investigation, return to solid earth and tackle the theory. The other way is to tackle the theory first and then try it out on the air. To convey an idea as to the latitude of this course, the subjects to be taught in the aeronautical course are given, as follows: Higher Mathematics, Communication, Mapping, Astronomy, Physics, Meteorology, Weather Calculations, Theory of Flight, Balloons, Aerodynamics, Aerostatics, Aircraft Mechanics, Testing Drawing, Administration, Chemistry, Electricity, Engineering Principles, Metal Working, Working Design and Construction, Topography, Wireless Telephony and Telegraphy, Safety Devices, uses of Instruments, some Commercial Law, and Aerial Navigation Laws, principles of law as it will be applied to the air, and Aerial Photography.

Colorado Aero Meet

Colorado's first Aero meet was held by the Colorado Aero Club July 30, 31, August 1 and 2 on the Curtiss-Humphreys field at Denver. The meet was originally to have been terminated on August 1, but owing to the large program and the enthusiasm displayed by both the entrants and the spectators, a fourth day was added. The attendance for the entire meet was close to three hundred thousand. There were presented eight cups and $2500 in cash prizes.

The main object of the meet throughout was safety. Stunting, when performed, usually prevailed at a safe altitude. The officials of the Colorado Club and The Aerial Navigation & Engineering Co. have in this way done a great deal for the safe flying.

The machines participating represented almost every commercial type manufactured in America. A banquet was held at the Brown Palace Hotel on August first, Mr. C. A. Johnson president of the Colorado Aero Club presided. The addresses were made by Jerry Vasconcelles, N. H. Steele, Don Hogan, Captain Underwood, Harry Ruffner and Al Lendrum.

Wright Co. Dividend

The Directors of the Wright Co. have declared an initial dividend of 25 cents a share on the company's stock.

"Who's Who in American Aeronautics"

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Every week, AVIATION AND AIRCRAFT JOURNAL prints the biographical sketch of men who are prominent in American Aeronautics. These sketches will be published later in pamphlet form. As so many of the officers change their stations often, it is believed that a semi-annual issue will be necessary. In compilations of this character many errors and omissions occur. It will be appreciated if corrections are sent to "Who's Who" Editor.

Clayton Bissell

BISSELL, CLAYTON, 1st Lieut., Air Service; born, Kane, Pa., July 20, 1896; son of Thomas Bissell and Isabelle Bissell.

Educated: Kane High School and Olean High School; LL.B., Valparaiso University.

Professional: Has been an officer since date of graduation with exception of short time with the Gallaudet Aircraft Corp.

Aeronautical Activities: Has been pilot, flight commander, squadron commander, and group commander; on duty in office of the Chief of Air Service for a short time.

Flying Rating: Junior Military Aviator, Jan. 1918; Airplane Pilot, March 1921.

War Service: On the front as pursuit pilot for four and a half months.

Present Occupation: 1st Lieut., Air Service.

Address: 114 Janeway Street, Kane, Pa.

Fred Sidney Borum

BORUM, FRED SIDNEY, 1st Lieut., Air Service; born, Winchester, Ill., April 25, 1892; son of Mr. S. D. Borum and Mrs. S. D. Borum; married, Marjorie Kellener, Jan. 23, 1918.

Educated: Four years high school; six months preparatory course.

Aeronautical Activities: Enlisted, Aug. 4, 1917 in A.S.S.O.R.C.; entered Ground School, Austin, Tex., Sept. 1917; completed flying training at Kelly Field and commissioned, Feb. 1, 1918; Primary Instructor during the war at various fields in Texas and Arkansas; promoted to 1st Lieut., Oct. 1918; assigned to the 1st Group Bomb., located at Kelly Field since Sept. 1919 to present date.

Flying Rating: Airplane Pilot.

Present Occupation: 1st Lieut., Air Service.

Address: 42 and W. Okmulgee Ave., Muskogee, Okla.

Donald R. Goodrich

GOODRICH, DONALD R., 1st Lieut., Air Service; born, Marshall, Mich., Oct. 17, 1894; son of John Goodrich and Mary Dorothy Goodrich.

Educated: Marshall High School.

Professional: Salesman, 1913-1917.

Aeronautical Activities: Ground School, Urbana, Ill., March 1918 to June 1918; flying cadet at Eberts Field, July 25, 1918 to Nov. 8, 1918; student officer at Rockwell Field, Pursuit and Aerial Gunnery School, Nov. 1918 to Feb. 14, 1919; instructor at Rockwell Field, Pursuit and Aerial Gunnery; Mexican Border Patrol Pilot, Sept. 1, 1919 to May 15, 1921; Project B, Langley Field, May 20, 1921 to date.

Flying Rating: Airplane Pilot, 1920.

War Service: Army, March 1918 to date.

Present Occupation: 1st Lieut., Air Service.

Address: Langley Field, Va.; home, 626-627 Post Bldg., Battle Creek, Mich.

Jasper Kemper McDuffie

McDUFFIE, JASPER KEMPER, 1st Lieut., Air Service; born, Marion, S. C., Dec. 15, 1892; son of Emerson McDuffie and Sally Ida (Fore) McDuffie; married, Elizabeth Cameron Hoofnagle, May 1, 1920.

Educated: Marion High School, Marion, S. C.; 1914-1916, Randolph-Macon College; 1916-1917, Columbia University.

Aeronautical Activities: Ground School at Georgia Tech., Nov. 3, 1917 to Jan. 12, 1918; primary training at Park Field; commissioned, April 30, 1918; advanced training at Issoudun, France, Oct. 13, 1918 to Dec. 12, 1918; 138th Aero Squadron, Lay-St-Remy, France and Coblenz, Germany from Jan. 1, 1919 to July 10, 1919; photographic school, Langley Field, May 1920 to date.

Flying Rating: Reserve Military Aviator, April 20, 1918; Airplane Pilot, July 1920.

War Service: Enlisted A.S., S.R.C., Oct. 8, 1917; commissioned 2nd Lieut., Air Service, April 30, 1918; 1st Lieut., Air Service, July 1, 1920.

Present Occupation: Airplane pilot and instructor, School of Aerial Photography.

Address: Langley Field, Va.; home, Marion, S. C.

John Raymond Drumm

DRUMM, JOHN RAYMOND, 1st Lieut., Air Service; born, Mt. Nebo, Pa., May 20, 1889; son of John M. Drumm and Sara A. Drumm.

Educated: Public schools; four years, normal schools; B.S., B.Pd., College.

Professional: Taught course in Scientific Agriculture, five years.

Aeronautical Activities: Training; testing; cross-country flights; border patrol; photography.

Flying Rating: Airplane Pilot.

War Service: Air Service since July 7, 1917.

Present Occupation: 1st Lieut., Air Service.

Address: Mt. Nebo, Pa.

Waldo Daniel Emery

EMERY, WALDO DANIEL, Machine Designer; born, Lynn, Mass., March 12, 1897; son of Joseph Emery and Cora (Southwick) Emery.

Educated: Providence Technical High School; Rhode Island State College.

Professional: Machine designer, Simplex Tool Co., 1919 to date.

Aeronautical Activities: Graduate Princeton Ground School, June 1918; training at Dann Field, Souther Field, and Kelly Field, Aug. 1918 to Jan. 1919.

Flying Rating: Reserve Military Aviator, April 1919.

Present Occupation: Machine designer.

Address: 27 Rockland Ave., Moonsocket, R. I.

James A. Woodruff

WOODRUFF, JAMES A., 1st Lieut., U. S. Air Service; born, Riverside, Ill., March 8, 1895; son of Charles A. Woodruff and Louise (Blayney) Woodruff.

Educated: West Division Height School, Milwaukee, Wis.

Aeronautical Activities: Air Service, Jan. 1918 to date.

Flying Rating: Reserve Military Aviator, May 25, 1918; Airplane Pilot.

War Service: Army, May 28, 1917 to date.

Present Occupation: 1st Lieut., Air Service.

Address: Langley Field, Va.

Sam Love Ellis

ELLIS, SAM LOVE, 1st Lieut., Air Service; born, Knoxville, Tenn., Dec. 11, 1895; son of Mr. T. N. Ellis and Mrs. T. N. Ellis.

Educated: Knoxville High School; two years, University of Tennessee.

Aeronautical Activities: Started training, Sept. 1917 at Hazelhurst Field, L. I.; finished Pursuit training at Gerstner Field, July 1918; Pursuit training at Issoudun, France, Nov. 1918; assigned to Pursuit Group, Oct. 1919.

Flying Rating: Airplane Pilot.

War Service: Army, May 8, 1917 to present date.

Present Occupation: 1st Lieut., Air Service.

Address Langley Field, Va.

Hiram Wilson Sheridan

SHERIDAN, HIRAM WILSON, 1st Lieut., Air Service; born, Leavenworth, Kans., May 26, 1897; son of Hiram Wilson Sheridan and Martha Jane Sheridan.

Educated: High schools of Topeka, Kans., Sacramento, Calif., New Orleans, La.; Wilson's Business College, Seattle, Wash.

Professional: Position with railroad company, 1913-1915; 1915-1917, in Alaska, prospecting, Secretary to Supt., Kennecott Mines.

Aeronautical Activities: Enlisted in Aviation Section, April 14, 1917 at Spokane, Wash.; Gerstner Field, Jan. to June 1918; commissioned, June 17, 1918; Carlstrom Field, pursuit and gunnery course; June 1920 to May 1921, Operations Officer of 1st Pursuit Group, Kelly Field.

Flying Rating: Reserve Military Aviator, June 12, 1918.

Present Occupation: Pilot and Armament Officer, 1st Provisional Pursuit Group, Langley Field, Va.

Address: 162 West Center Street, Logan, Utah.

Lloyd L. Harvey

HARVEY, LLOYD L., Captain, Air Service; born, Allegan, Mich., Nov. 17, 1891; son of Henry W. Harvey and Florence (McEntee) Harvey; married, Eleanor Dow, June 2, 1915.

Educated: Public and high schools.

Professional: Automobile sales agent; civilian aviator, 1916-1917.

Aeronautical Activities: 1916-1917, Civilian aviator; 1917 to date, pilot, U. S. Army.

Flying Rating: Airplane Pilot.

War Service: Army, 1917 to date.

Present Occupation: Captain, U. S. Army Air Service.

Address: c/o The Adjutant General of the Army, Washington, D. C.

Edgar A. Liebhauser

LIEBHAUSER, EDGAR A., 1st Lieut., Air Service; born, Marysville, Calif., Oct. 28, 1889; son of John A. Liebhauser and Annie Jane Liebhauser; married, Rose Anne Gillespie, April 7, 1920.

Educated: Grammar and high schools of Marysville, Calif.

Professional: Mechanical engineer, 1911 to 1917.

Aeronautical Activities: Army training only; started flying, Dec. 17, 1917 at Ellington Field; active flying duty in Army Air Service to date.

Flying Rating: Airplane Pilot.

Present Occupation: 1st Lieut., Air Service.

Address: Langley Field, Va.

James Alexander Mollison

MOLLISON, JAMES ALEXANDER, 1st Lieut., Air Service; born, Smith Center, Kans., July 9, 1897; son of James Douglas Mollison and Mary E. Mollison.

Educated: Public schools of San Diego, Calif.; San Diego Army and Navy Academy.

Aeronautical Activities: Started flying training, Jan. 1918; graduated from Pursuit and Aerial Gunnery School, Rockwell Field, 1918; Cleveland Forrest Patrol, 1919; Mexican Border Patrol, Sept. 1919 to March 1921; Project B, May 1921 to date.

Flying Rating: Airplane Pilot.

War Service: Signal Reserve Corps, Air Service, Nov. 1, 1917 to Nov. 11, 1918.

Present Occupation: 1st Lieut,, Air Service.

Address: 2076 Third Street, San Diego, Calif.

Bushrod Hoppin

HOPPIN, BUSHROD, 1st Lieut., Air Service; born, Ft. Wingate, N. Mex., Feb. 23, 1893; son of Curtis B. Hoppin and Elizabeth D. Hoppin.

Educated: Englewood High School; Central High School, Washington, D. C.; Dowds Academy, two years.

Aeronautical Activities: Preliminary training, Sept. 1, 1917 to May 4, 1918; finished flying training with French, Aug. 7, 1918; assigned to Pursuit Group, Jan. 1920.

Flying Rating: Military Aviator (French); Airplane Pilot.

War Service: Army, July 31, 1917 to present date.

Present Occupation: 1st Lieut., Air Service.

Address: Wellington Apt., Washington, D. C.

Thomas W. Blackburn, Jr.

BLACKBURN, THOMAS W., JR., 1st Lieut., Air Service; born, Cane Hill, Ark., April 26, 1892; son of Thomas W. Blackburn and Virginia Blackburn; married, Mae Casey, Nov. 4, 1920.

Educated: Public schools of Cane Hill, Ark.; two years, college.

Professional: Wagner Electric & Mfg. Co., St. Louis, 1914-1916; Commonwealth Steel Co., 1916-1917.

Aeronautical Activities: Training, R. A. F., Nov. 1917 to April 1918; 56th Squadron, R. A. F. Pilot, July-Aug. 1918; 25th Squadron, A.E.F., Nov. 1918 to April 1919.

Flying Rating: Pursuit Pilot, July 24, 1918.

War Service: As above.

Present Occupation: 1st Lieut., Air Service.

Address: Langley Field, Va.; home, Cane Hill, Ark.

Raymond E. Davis

DAVIS, RAYMOND E., 1st Lieut., Air Service; born, Danville, Ill., Aug. 10, 1894; son of Louis S. Davis and Eva A. Davis.
Educated: Public schools; one year, academic college; three years, Ceramic Engineering.
Aeronautical Activities: Army Air Service from July 21, 1917 to date.
Flying Rating: Airplane Pilot, Nov. 24, 1917.
War Service: U. S. Army, May 12, 1917 to date.
Present Occupation: 1st Lieut., Air Service.
Address: Langley Field, Hampton, Va.; home, 105 E. English St., Danville, Ill.

George Platt Tourtellot

TOURTELLOT, GEORGE PLATT, 1st Lieut., Air Service; born, Dowa, Iowa, Nov. 5, 1895; son of George M. Tourtellot and Mary L. Tourtellot.
Educated: High school, Hudson, Wis.; Carrol College, Waukesha, Wis.
Aeronautical Activities: Flying cadet, Oct. 31, 1917; commissioned, July 23, 1918; flying from Oct. 1917 to date in U. S., France, and Germany.
Flying Rating: Airplane Pilot.
War Service: Air Service, Army, Oct. 31, 1917 to close of war.
Present Occupation: 1st Lieut., Air Service.
Address: First Group (Pursuit), Ellington Field, Tex.; home, 6801 8th Ave., N. E., Seattle, Wash.

Richard Aldworth

ALDWORTH, RICHARD, 1st Lieut., Air Service; born, Augusta, Ga., Oct. 1, 1897; son of Thomas Aldworth and Agnes (Quinn) Aldworth.
Educated: Private schools; two years, St. Mary's College; two years, Jesuit College.
Aeronautical Activities: Flew in Italy, Feb. to May 1918; France, Feb. to Nov. 1918; Germany, May to July 1919; Kelly Field, Dec. 1919 to date.
Flying Rating: Airplane Pilot.
War Service: Army, May 1917 to date.
War Honors: Citation by Army Air Service Commander First Army.
Present Occupation: 1st Lieut., Air Service.
Address: 315 W. Poplar Street, San Antonio, Tex.

Thomas Kennedy Matthews

MATTHEWS, THOMAS KENNEDY, 1st Lieut., Air Service; born, Earlville, Iowa, Nov. 5, 1895; son of Dr. T. G. Matthews and Annie M. Matthews.
Educated: Public schools of Missoula, Mont.; high school, Butte, Mont.; University of Montana.
Aeronautical Activities: Air Service Ground School, University of California, Feb. 1918; primary and advanced flying training, Rockwell Field; commissioned, July 6, 1918; overseas, Sept. 1918 to July 1919; advanced pursuit training, 3rd aviation instruction center, Issoudun, France; member 28th Pursuit Squadron, 3rd and 2nd Pursuit Groups, Dec. 5, 1918 to April 30, 1919; Mitchel Field and Kelly Field, July 20, 1919 to Oct. 1920; commanding 95th Pursuit Squadron, 1st Group from Oct. 1920 to date.
Flying Rating: Airplane Pilot.
War Service: Army, May 30, 1917 to July 1, 1917; Aviation Cadet, S.E.R.C., Nov. 1, 1917 to July 6, 1918; 2nd Lieut., Air Service to July 1, 1920; 1st Lieut., Air Service to date.
Present Occupation: Commanding, 95th Pursuit Squadron, 1st Group, Kelly Field, Tex.; temporary duty, Operations Officer, 1st Provisional Pursuit Squadron, Langley Field, Va.
Address: 804 Chestnut Street, Missoula, Mont.

Lewis S. Webster

WEBSTER, LEWIS S., 1st Lieut., Air Service; born, Lakeland, Fla., Sept. 18, 1892; son of Edgar E. Webster and Lucia M. Webster; married, Della F. Fraser, June 15, 1918.
Educated: Summerlin High School, Bartow, Fla.; three years, University of Illinois, left school to enter the war.
Professional: Two years practice in Farm Drainage and Surveying in Northern Illinois, 1913-1915.
Aeronautical Activities: Entered Ground School at University of Illinois, Nov. 10, 1917; completed course, Jan. 19, 1918; flying training at Rich Field, Jan. 23, 1918 and completed course, June 4, 1918; flying instructor's course at Brooks Field, ordered to Call Field, Sept. 23, 1918; ordered to Langley Field, Oct. 2, 1918 and has remained there until present date; member of 88th Aero Squadron since July 1919; made trip across continent in Oct. 1919 on the Trans-Continental Reliability and Endurance Race, finishing seventh.
Flying Rating: Reserve Military Aviator, June 5, 1918.
Member: Aero Club of America.
Present Occupation: 1st Lieut., Air Service.
Address: Langley Field, Va.

Delmar H. Dunton

DUNTON, DELMAR H., 1st Lieut., Air Service; born, Detroit, Mich., Nov. 1, 1890; son of Delmar H. Dunton and Blanche Dunton.
Educated: Public schools of Detroit, Mich.
Professional: Automobile business.
Aeronautical Activities: Flying cadet, April 5, 1918 to Aug. 3, 1918; commissioned, Aug. 3, 1918; Air Service to date.
Flying Rating: Reserve Military Aviator, Aug. 3, 1918.
Present Occupation: 1st Lieut., Air Service.
Address: 24 Grant Court, Detroit, Mich.

Stanton Thomas Smith

SMITH, STANTON THOMAS, 1st Lieut., Air Service; born, Independence, Mo., Aug. 30, 1894; son of Thomas Newton Smith and Mattie (Furnish) Smith; married, Maria Spencer, Dec. 22, 1914.
Educated: High school, San Antonio, Tex.
Professional: Salesman from May 1912 to Sept. 1917.
Aeronautical Activities: Started flying training, April 3, 1918; commissioned 2nd Lieut., Air Service, Sept. 12, 1918.
Flying Rating: Airplane Pilot, 1918.
Present Occupation: 1st Lieut., Air Service.
Address: Home, Commonwealth Bank & Trust Co., San Antonio, Tex.

Clearton H. Reynolds

REYNOLDS, CLEARTON H., Captain, Air Service; born, Provincetown, Mass., Jan. 29, 1888; son of Lina R. Reynolds; married, Elizabeth H. Reeside, Dec. 30, 1919.
Educated: B.S. 1912, Dartmouth College.
Professional: Supervisory and Engineering work, American Telephone and Telegraph Co., 1913-1916.
Aeronautical Activities: Flying training, 1st Provisional Aero Squadron, N. Y., May 1916 to Nov. 1916; student instructor, aviation station, Mineola, N. Y., Nov. to Feb. 1917; commissioned, Aviation Section Signal Corps, Jan. 1917; overseas with 1st Aero Squadron; returned March 1919; office, D.M.A. March 1919 to June 1919; Langley Field, July 1919 to date; completed course, Air Service Field Officers School, June 1921.
Flying Rating: Airplane Pilot.
War Service: Overseas with A.E.F., Aug. 13, 1917 to March 17, 1919.
War Honors: Distinguished Service Cross.
Member: Aero Club of America; Society of Automotive Engineers.
Present Occupation: Captain, Air Service.
Address: Langley Field, Va.

Alfred Lindeburg

LINDEBURG, ALFRED, 1st Lieut., Air Service; born, Newark, N. J., Sept. 25, 1896; son of John Lindeburg and Rosa (Schaefer) Lindeburg.
Educated: Barringer High School, Newark, N. J.; Rutgers College, 1916 to 1917.
Aeronautical Activities: Flying cadet from Dec. 1, 1917 to March 14, 1918; A. E. F. from May 18, 1918 to Aug. 17, 1919; 14th Bombing Squadron, April 1921 to present date.
Flying Rating: Reserve Military Aviator, March 20, 1918; Airplane Pilot, Jan. 14, 1920.
War Service: A.S.S.E.R.C., Sept. 12, 1917 to March 14, 1918; 2nd Lieut., Air Service, March 14, 1918 to July 1, 1920; 1st Lieut., Air Service, July 1, 1920 to date.
Present Occupation: 1st Lieut., Air Service.
Address: Langley Field, Hampton, Va.; home, 58 S. 12th Street, Newark, N. J.

Edwin Barton Bobzien

BOBZIEN, EDWIN BARTON, 1st Lieut., Air Service; born, Grants Pass, Ore., Oct. 13, 1896; son of Herman Charles Bobzien and Mattie Louise Bobzien; married Kathleen Samuels Spencer, June 12, 1920.
Educated: Public and high schools of Grants Pass; one year, U. S. Naval Academy.
Aeronautical Activities: School of Military Aeronautics, Austin, Tex., Feb. 1918 to April 1918; Concentration Camp, Dallas, Tex., April 13 to May 1, 1918; primary training, Gerstner Field; commissioned, June 13, 1918; pursuit training, Gerstner Field; instructor of acrobatics and combat, Nov. 1918 to May 1919; instructor of pursuit and primary training, Aug. 1919 to Nov. 1920; assigned to U. S. A. School of Aerial Photography, Nov. 1920.
Flying Rating: Reserve Military Aviator, July 12, 1918; Pursuit Pilot, Oct. 12, 1918; Airplane Pilot.
War Service: Enlisted U. S. Army, Aug. 1917; flying cadet, Feb. 1918 to June 12, 1918; commissioned 2nd Lieut., June 13, 1918; commissioned 1st Lieut., July 1, 1920.
Member: Aero Club of America.
Present Occupation: 1st Lieut., Air Service.
Address: Langley Field, Va.; home, 1725 Arch Ave., West Seattle, Wash.

James H. Doolittle

DOOLITTLE, JAMES H., 1st Lieut., Air Service; born, Alameda, Calif., Dec. 14, 1896; son of Frank H. Doolittle and Rosa C. Doolittle; married, Josephine E. Daniels, Dec. 24, 1917.
Educated: Manual Arts High School of Los Angeles, Calif.; University of California, three years.
Flying Rating: Reserve Military Aviator, March 5, 1918.
War Service: Army, Oct. 6, 1917 to date.
Present Occupation: 1st Lieut., U. S. Army.
Address: Airdrome, Del Rio, Tex.

Wallis E. Frederick

FREDERICK, WALLIS E., 1st Lieut., Air Service; born, Abbott, Tex., Sept. 20, 1895; son of Archa W. Frederick and Sadie T. Frederick; married, Josie A. Cate, Sept. 1, 1917.
Educated: Backy High School, Rocky, Okla.; Southwestern State Normal School, Weatherford, Okla.
Aeronautical Activities: Airplane Pilot, Aug. 1918.
War Service: Army, Aug. 3, 1917 to Oct. 27, 1919.
Present Occupation: 1st Lieut., Air Service.
Address: Langley Field, Va.; home, Weatherford, Okla.

Stacy C. Hinkle

HINKLE, STACY C., 1st Lieut., Air Service; born, Delphi, Ind., Oct. 4, 1895; son of Charles W. Hinkle and Adelle Hinkle; married, Gladys Ruth Gaffield, April 14, 1920.
Educated: Rushville High School; two years, Carnegie Institute of Technology, Pittsburgh, Pa.
Aeronautical Activities: Ground School, Princeton University, Jan. 3 to March 9, 1918; took bombing course at Ellington Field, April 1 to July 1918; Aerial Gunnery School, San Leon, Tex. to Oct. 1918; Casual Officers Detachment, Garden City, L. I., Oct. 1918 to Feb. 1919; Ellington Field to June 20, 1919; El Paso, Tex. on border patrol, June 22, 1919 to date.
Flying Rating: Aerial Bomber, July 1918; Aerial Gunner, Sept. 1918; Airplane Pilot, Oct. 1919.
Present Occupation: 1st Lieut., Army Air Service.
Address: 1019 Elm Street, El Paso, Tex.; home, 228 West 5th Street, Rushville, Ind.

George B. Patterson

PATTERSON, GEORGE B., 1st Lieut., Air Service; born, Brookline, Mass., April 19, 1895; son of James C. Patterson and Mary G. Patterson.
Educated: Asheville School, Asheville, N. C.; Mechanical Engineering, University of Pennsylvania.
Aeronautical Activities: Flying training at Essington, Pa., May 1917; Performance Test Pilot with Technical Section, 1918; Test Pilot, Engineering Division, 1919, 1920; Chief, Technical Data Section, Engineering Divison, 1921.
Flying Rating: Reserve Military Aviator, Aug. 30, 1917; Airplane Pilot, Oct. 1920.
War Service: Sgt., S.E.R.C., May 13, 1917; 1st Lieut., S.O.R.C., Oct. 1, 1917; Capt., A.S., Oct., 11, 1918; 1st Lieut., Reg. Army, July 1, 1920.
Member: Aero Club of America; Dayton City Club; Dayton Country Club.
Present Occupation: Chief, Technical Data Section, Engineering Division.
Address: McCook Field, Dayton, Ohio; home, 410 Delaney St., Orlando, Fla.

Reuben Dallam Biggs

BIGGS, REUBEN DALLAM, 1st Lieut., Air Service; born, Seguin, Tex., Nov. 12, 1895; son of Rev. W. H. H. Biggs and Pattie (Taylor) Biggs; married, Christina Brady, July 8, 1919.
Educated: Coronal Institute, San Marcos, Tex., 1909-1913; Southwest Texas State Normal, 1913-1914; Southwestern University, Georgetown, Tex., 1914-1917.
Professional: Student until entering 1st R.O.T.C. at Leon Springs, Tex.
Aeronautical Activities: Trained on Nieuports at Issoudun, May 18 to July 14, 1918; bombing school at Clermont-Ferrand, July 14 to Sept. 3, 1918; 11th Aero Squadron, 1st Day Bombardment Group, Sept. 3 until Armistice; Air Service Engineering Division, since Armistice until April 13, 1921; Project B., Langley Field, Va., April 13, 1921 to date.
Flying Rating: Reserve Military Aviator, May 15, 1918.
War Service: 1st R.O.T.C., Leon Springs, Tex., May 8, 1917 to Aug. 11, 1917; School of Military Aeronautics, Austin, Tex., Aug.-Oct., 1917; overseas, from Oct. 13, 1917 until March 24, 1918.
War Honors: Official confirmation of destruction of one enemy Pfalz and one Fokker.
Member: Aero Club of America.
Present Occupation: 1st Lieut., Air Service.
Address: Langley Field, Va.

Flight Through the Grand Canyon

Lieut. Alexander Pearson, Air Service, in making his flight to the Grand Canyon of Arizona, had another interesting experience following his attempt to cover the New York to San Francisco transcontinental flight. It will be recalled that on this journey, while flying from El Paso to San Antonio his machine developed engine trouble and he was forced to come down in a canyon south of the Rio Grande river. His machine was subsequently recovered by an expedition sent into Mexico for that purpose; a new engine was installed and it was flown back to the Del Rio airdrome.

The flight over and in the Canyon was made between 9:00 and 10:00 a. m. on June 10th. Lieutenant Pearson states that at the beginning of this flight there was a sligh east wind blowing and that it was very warm, the air being quite calm except for heat bumps. It was just as smooth over and in the canyon as outside except for a strip along each wall, where there was a very noticeable rough region, between a quarter and a half mile wide,caused by strong rising currents of air heated by the canyon walls. Lieutenant Pearson thought there would probably be a downward current of air in the middle of the canyon to replace that rising near the walls, but it was not noticeable. This was probably due to the fact that if there were such a downward current, its velocity would be not more than that of of the rising current at the canyon wall. This conclusion was arrived at by assuming that there was no longitudinal or up or down stream displacement of air in the canyon and that the region of rising air extended one-half mile back from the canyon walls. This would give a rising air stratum one mile wide, and as the average width of the canyon is 10 miles it would leave a downward column of air nine miles wide to replace the rising air. Its downward velocity should therefore average about one-ninth that of the rising air. Strong cross winds had the effect of greatly widening the belt of rising air on the side of the canyon opposite to that from which the wind was blowing, but did not change the column on the other side.

Lieutenant Pearson started for the Grand Canyon from Nogales, Arizona, on May 31st, making stops at Phoenix, Prescott, Ashford and Williams, and selecting landing fields at each of these places. He arrived at the Grand Canyon on June 4th and spent the day in conference with the Superintendent of Parks and in looking for possible landing fields. He states that no place closer than eleven miles from the Grand Canyon station was found that was not covered with timber. Fairly good emergency fields were found to the north, west and east of Anita and one near Coconio, one-fourth of a mile east of Anita, which is one mile long and one-fourth of a mile wide, flat, and with good approaches from north, east and southwest. This field was covered with sage-brush 18 in. high and had prairie dog holes on it, but could be made suitable for landing at an expense of $150.00 or less. Just to the northwest of Anita is a slight rise which is flat on top and on which an excellent field could be made, as a space one-half mile square with approaches from any direction is available. It is level land without any prairie dog holes, but is covered with sage brush. The altitude of this tract is 6,100 ft. and it would only be necessary to drag it with railroad iron to put it in excellent shape. This was the most practicable field found in the vicinity of the canyon, as it is on the railroad, 15 miles airline from the Grand Canyon, and it would cost but little to put it in condition. The nearness to the railroad is an imporrant item, as all supplies, even water, must be shipped in, and roads are none too good. Passengers to or from Grand Canyon could be carried to and from Anita by a railroad or auto in one-half hour at all seasons of the year.

Good emergency fields exist all the way between Williams and Anita and to the east as far as the San Francisco mountains and to the west for 30 miles between Anita and Grand Canyon.

On June 5th Lieutenant Pearson, in company with the Chief Ranger of the Grand Canyon National Park, went down in the Canyon to look over the plateau. The plateau is 3,750 ft. above sea level and while generally level, it is rough and full of hollows. Lieutenant Pearson states that a landing on any part of this plateau would almost certainly result in a crash. Two way landing fields of 400 or 500 yd. in length by 75 yd. in width could be built on this plateau at a number of places at a cost of about $1,000 each, as the surface of the plateau is of decomposed rock and could be easily worked. No other level of the canyon is suitable for an emergency landing field.

On June 6th Lieut. Pearson started on his return trip to Nogales and arrived there June 8th. On the following day he flew to Williams, Ariz., which he used as a base because of the proximity of the fiield to town, and the availability of fuel gas and oil. It was also the closest field to Grand Canyon that could be used, as no funds were available to prepare fields closer.

On June 11th, the day following Lieut. Pearson's flight over the Grand Canyon, he left Williams at 8:25 a. m., flying by way of Flagstaff, San Francisco peaks, Little Colorado River, Painted Desert, Marble Canyon and Kaibab Plateau. There were few, if any, fields that could be landed in after leaving San Francisco Mountains, as it is rough, sandy desert country. The Kaibab plateau is a high rolling tract of land heavily covered with timber. There is one unique spot in the Plateau, called Big Park, which for some curious reason is bare. It is approximately one-half mile wide and 5 miles long, lying in a small valley running north and south. It is the only place on the plateau on which a landing could be made. Lieut Pearson landed there at 10:20 a. m. He states that it is a very good field, and can be used without any preparation, if the machine can take off at this altitude—8,800 ft. He took off without any difficulty and flew in and around the canyon for half an hour. His experiences were similar to those of the previous day. He descended 3500 ft. below the south rim of the canyon and 4500 ft. below the north rim. No difficulty was experienced except that the motor became very hot, due to the hot air in the bottom of the canyon.

On June 15th Lieutenant Pearson made another trip to the canyon, taking off at 2:20 p. m. in a strong southwest wind blowing 40 m.p.h. The air was bumpy all the way to the canyon. He crossed over and back a number of times at altitudes of from 500 to 4,000 ft. above the rim, and found that there was no difference in roughness over the canyon and land at corresponding altitudes. He did not descend into the canyon for the reason that it is very unpleasant to fly in such close quarters during rough weather.

Still another trip to the canyon was made on June 17th, with experiences similar to those of preceeding flights. On June 18th Mr. H. H. Bullen arrived at Williams from Kanab, Utah, flying a Curtiss Standard with 150 h.p. Kirkham 6 Curtiss Motor. The weather was ideal—cool and no wind. Lieut. Pearson took off at 7:50 a. m. for the Grand Canyon and returned at 9:50 a. m. Moving pictures were made of this flight under authority of the Chief of Air Service. Flying conditions were like those of the first day and there were no bumps even at the canyon walls, as they had not had time to heat up this early in the morning.

In summarizing Lieut. Pearson's report, the Commanding Officer of flight "B" 12th Squadron, states that a total of 14 flights for a total of 22 h. and 5 min. were made above and in the vicinity of the canyon during a period of 14 days; 420 gal. of fuel and 50 qt. of oil being consumed. He believes that commercial flying across the Grand Canyon and its vicinity is feasible and practical, but recommends that a machine of at least a rate of climb equal to 400 ft. per minute at 7,000 ft. and a 17,000 ft. ceiling be required of the operating company in order to assure the safety of passengers and that no flying over the canyon be permitted at an altitude of less than 11,500 ft. above sea level or 3,500 ft. above the north rim unless a plateau emergency field is built; that if such a field is built with 400 yd. runway, flying for sight seeing purposes might be carried on with safety at 6,000 ft. above sea level or 1,000 ft. below the south rim provided the plane was piloted within gliding distance of the plateau field. Furthermore no field should be built within two miles of the rim of the canyon on account of the bumpy air conditions near the canyon walls which would tend to make take off's and landings difficult.

Bombs or Torpedoes

The following discussion of the relative value of bombs and torpedoes as used in an attack on seacraft has been received and is published to stimulate thought on this all important question. As yet little information is available to the public concerning the use of torpedoes as launched from aircraft. The recent bombing tests have resulted in much information as to the effect of bombs on seacraft. The reliance of the British on topedoes in preference to bombs should be carefully noted.—EDITOR.

The history of armament and armor shows either one or the other of the opposing factions constantly to be advancing to keep pace with or supersede its rival. In a narrow sense armor means the protective covering of the target under fire; be it the steel armor plate of the capital ship or the reinforced concrete of the shore battery, it matters little. Similarly, in a narow sense armament means the ordnance which is to penetrate the armor of the target.

The recent war has resulted in a broader conception of the meaning of these terms, however. Thus any factor contributing to the defense, exclusive of personnel, is armor; and similarly any factor contributing to the attack, exclusive of personnel is armament. As an illustration, camouflage is a form both of armor or armament depending upon the manner in which it is used.

Aircraft have exercised great influence toward this new conception of armor and armament. In previous wars, with the exception of shore battery work, different branches of opposing forces seldom came into conflict. That is to say that naval forces were exclusively engaged with naval forces and army forces exclusively engaged with army forces—the exception being as already mentioned, shore battery work. The use of aircraft has changed this by opening up previously closed channels of attack and defense. Thus we have aircraft combating submarines, bombing cities, and machine gunning troops. The recent war showed aircraft able to attack and defend both the other branches of the service, so that in the future these services will not only have to prepare a defense from their own kind of an opposing force, but also from that dominating factor of the opposing force—the aircraft.

All this is of interest in connection with the present controversy over capital ship and aircraft.

The Air Service has devised schemes for attacking a battle fleet. As sure as a scheme of attack is evolved a scheme of defense will be advanced to meet it. The logical procedure will be to plan an attack for which a defense cannot easily be evolved. Any particular form of aerial attack is open to discussion. Information available indicates that bombing is in favor. Whether this is so because it is the best method of attack or because it is the method of attack best adapted to the material and equipment available is a question.

The most vulnerable part of the modern capital ship is below the water line—not so much from a standpoint of being sunk as from the standpoint of being put out of action by an explosion which will disarrange appliances controlling lighting, steering apparatus, and the many auxiliaries which combine to enable a capital ship to perform its duty.

The fire control gear also will be liable to disruption by the explosion of an aircraft projectile which would not, in this particular case, need to sink the ship to put it out of action.

Incidentally a ship disabled in fire control and steering gear quently helpless among its own fleet might do considerable damage there and hence prove of more advantage to the enemy than the same ship sunk.

For attacking a capital ship the torpedo might be preferable to the bomb. The outstanding advantage the torpedo attack posseses over the bombing attack is that its chances of error are half those of the bombing method. A bomb must be sighted against error longitudinally and laterally while a torpedo need only be sighted against the former error.

Consider the recent bombing tests. The longitudinal aim was for the most part correct. The misses were due to error in lateral aim. This is the error which would be eliminated when sighting a torpedo. Furthermore, bombing involving the minimum chances of error should be done either down or up wind, preferably the latter, to eliminate drift. The simplest defense then for a ship under attack from bombs would be to go across wind. Drift caused by cross wind relative to the target involves chances of lateral error which would be largely eliminated in a torpedo attack. The attack should be carried out by high speed, folding wing torpedo and mine carrying planes which will leave their shore or carrier base, as the occasion requires, escorted by fighting machines. All the attackers will be in constant radio communication with their commanders who will direct the attack as the exigencies of the battle demand. The attackers will approach the target from windward with the torpedo-planes preceding the mine-planes and the whole formation escorted by fighting machines. The torpedoes will be launched from the cover of a smoke screen previously established by those of the escort designated for the purpose. Indications are that this form of attack will be met by a smoke screen from the destroyer escort of the capital ships. In this event the mine-planes will detach themselves from the formation, and with their escort of fighting machines proceed to mine the waters in the course of the fleet while hidden by the latter's smoke screen. Meanwhile the attacking fighting machines will be engaged with those of the enemy.

Consideration must be given, in this form of battle, as in any form, to those important elements of attack—surprise and morale. In both these the attacking aircraft will have advantages. They will see before they are seen, and when the attack is under way, if things come to the worst, we can have faith in our fliers knowing that some torpedoes will reach their mark even if it is necessary for the pilots to fly recklessly in the face of gun fire.

"Santa Maria" Arrives at Chicago

"Santa Maria," the twelve passenger flying boat of the Aeromarine Engineering & Sales Co., completed another leg of its long voyage from Havana, Cuba, when it arrived at Chicago July 28, having left Detroit six days previously. The machine was piloted by Edward Musick and the passengers were Lt. Commander P. N. L. Bellinger, Commissioner of Police Inches of Detroit, A. W. Metzger, President Detroit Automobile Club, Jack Binns of the New York Tribune and C. F. Redden, Sales Manager of the Aeromarine Co. Numerous other passengers were carried from town to town en route. Stops were made at Bay City, Benton Harbor, Harbor Beach, Muskegon, Traverse City, Charlevoix, Manistee, Michigan City, Mackinaw, Sheboygan and Milwaukee. An enthusiastic reception was given the air voyagers at all stops including an official greeting at Chicago by the mayor.

Aeromarine Co. at Traverse City

Traverse City, Michigan, will be the distributing point for territory north of Grand Rapids for the Aeromarine Airways Co. M. D. Bryant will represent the company in this territory.

Underwriters' Aircraft Certificates

On the opposite page there are reproduced the certificates which the Underwriters' Laboratories, under a recent provision, issue to aircraft and aircraft pilots answering certain requirements. These requirements, which were published in the July 18, 1921, issue of AVIATION AND AIRCRAFT JOURNAL, are based on the provisions of the International Convention for the Regulation of Air Navigation and correspond to those adopted for Lloyd's Aviation Register.

In connection with the Underwriters' Laboratories plan for registering aircraft and aircraft pilots the reader is also referred to the conditions governing the admittance of American Aircraft to Canada, which was published in the issue of AVIATION AND AIRCRAFT JOURNAL above mentioned.

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SAN FRANCISCO, 205 MERCHANTS EXCHANGE BLDG.

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This Certifies that the AIRCRAFT described below has been entered in

UNDERWRITERS' LABORATORIES' AIRCRAFT REGISTER

under the nationality and registration mark_____ as a_____

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Underwriters' Laboratories, Inc.

Date_____ 192__ By_____
Vice-President

DESCRIPTION of REGISTERED AIRCRAFT

Manufacturer_____ Maker's Type No._____ Serial No._____

Over all Length_____ Feet. Span_____ Feet. Height over all_____ Feet

Dead Load_____ Lbs. Full Load_____ Lbs. Useful Load_____ Lbs.

Air Speed_____ M. P. H. Service Ceiling_____ Feet. Cruising Radius_____ Miles

Engines: Type_____ Number of_____ Registry Nos._____

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under the classification_____.

This registration expires 12 months from date of issue and prior thereto if more than 90 days elapse without actual flying by the registrant. It may be cancelled or suspended at any time for cause and is automatically suspended following a crash involving insurance loss pending INQUIRY.

Application for renewal should be made to the addresses given above.

CERTIFICATE NO._____ Underwriters' Laboratories, Inc.

Date of Issue_____ 192__ By_____
Vice-President

TO WHOM IT MAY CONCERN: Safety in aviation is regularly achieved. The pilot is responsible for the condition of his ship before taking off; that he commences flight only with favorable weather conditions; that passengers shall not handle or interfere with controls, instruments or other operating mechanism during flight, and as to circumstances, time and place of landing; subject to the RULES of the AIR

Opening of Air Service R. O. T. C. Camp

The first Air Service Reserve Officers Training Camp opened at Post Field, Fort Sill, Oklahoma, on June 16, 1921, thereby marking development in the Air Service preparedness program. There are thirty-one students at the camp, twelve from the Massachusetts Institute of Technology, five from the Georgia School of Technology, two from the Texas Agriculture and Mechanical College, seven from the University of Illinois, and five from the University of Washington. Students who are enrolled in the Air Service R. O. T. C. units at educational institutions, and who have completed two years of Air Service work are eligible for the camp if they are physically qualified to pass the medical examination to determine fitness for pilot duty.

At this advanced camp the students are taught aerial observation, and receive theoretical and practical instruction on the ground and flying experience in DH-4B planes as observers. The course of instruction lasts six weeks, and includes visual reconnaissance, radio, aerial gunnery, photography, meteorology, trap shooting, infantry drill, and calisthenics.

The administrative personnel of the camp is composed of the officers attached to the six R. O. T. C. units who have been ordered to Post Field for this temporary duty during the camp.

A New French Contemporary

We are in receipt of the first issue of *Les Ailes*, a new weekly aeronautical publication with offices at 17 Boulevard des Batignolles, Paris, France. Our latest contemporary is issued in the form of a newspaper and deals with all phases of aeronautics, paying particular attention to news. The editor of *Les Ailes* is George Houard.

AVIATION AND AIRCRAFT JOURNAL extends to its new confrere its best wishes of success and prosperity.

New York Aviators Support LaGuardia

New York aviators who served during the War have organized a committee to further the interests of Major Fiorella LaGuardia, President of the Board of Aldermmen, in the coming New York City mayoralty elections. President LaGuardia resigned his seat in Congress during the War to service in the Army Air Service. He attained the rank of Major, and won several decorations for valor while fighting in France and Italy.

The committee recently met and presented to President LaGuardia at the City Hall a small model airplane, symbolical of the new ship of state, and the first communique from the Air Service to the people of New York.

The committee is headed by Jacques M. Swaab, who was cited for gallantry at Metz and Thiaucourt, and is credited with the destruction of 10 German machines for which he received the Distinguished Service Cross. In presenting the model airplane to President LaGuardia Mr. Swaab said:

"Major, it is my pleasant duty to speak for this committee representing aviators who served with you, now residents of New York City. It was indeed gratifying when a few of us got together, that we found every man in our branch of the service standing solidly behind you, regardless of their political affiliations. No greater compliment can be paid to a soldier, than that of his comrades who served with him, thinking well of him after the uniforms are laid away, and it is a rare event indeed, when a group of soldiers band themselves together and show the respect for a man that they do for you after having served under you as an officer.

"We all know you. We all know what kind of an administration New York City should have. None of us know anything about politics. We do know that we want to see you nominated, because from what we hear from non-political circles, you are the man who can beat Tammany.

"We, who served with you, know how rapidly you can climb, and we are sure that your machine is sound and your platform is just. We know that you will drive through the enemies ranks with the same success and accuracy that you dropped your high explosive bombs. You always keep your machine from sideslipping or from spinning—that's the kind of man we want to guide the ship of this city. Permit me, Major, to present to you the symbol of the new ship of state and with it the first communique from the air service to the people of New York in the great battle now going on for the just, clean, efficient government."

The communique, which was presented at the same time, reads as follows:

SPECIAL COMMUNIQUE TO ALL REPUBLICANS:

1. That you will report at the Primary on Sept. 9 fully equipped to do your duty as Republicans of the City of New York:

2. That you will vote to give the City of New York a home rule administration through candidates who will be responsible to the people who elect them and not to the rural bosses at Albany:

3. That you will remember the record of Major F. H. LaGuardia as a progressive Congressman; an aviator in the branch of the army, requiring qualities of independence, steadiness and unerring judgment; as President of the Board of Aldermen who has stood first, last, and all the time for the welfare of the people of our city; and give him your vote for Mayor.

By command of Public Opinion.

THE AVIATOR'S COMMITTEE FOR LAGUARDIA

JACQUES SWAAB PRESENTING A MODEL PURSUIT AIRPLANE TO F. H. LA GUARDIA

Among the New York aviators who are on the committee are the following:

J. Swaab, Harry Buyers, Victor A. Clement, Irving Morange, Henry M. Lietchfield, Noel Armstrong, J. W. Martin, Eugene W. Gilmore, R. Honly, Wilbur Lewis, Robt. S. Horseley, Paul Brew, Hugh D. McKay, Major D. G. Schauffler, Frederick J. Mayer, George A. Fagella.

Mr. D. Frank Marcus, Wm. A. Fox, Herbert Schiff, Schuyler E. Grey, R. B. Hollander, Edward P. Frost, Vincent J. Coletti, Wallace O. James, Herbert C. Comstock, Jr., Arthur P. Wurmstich, Robert H. Reakirt, Mr. Meredith J. Roberts, Geo. M. Moen, Harold A. Danne, H. P. Rice, Jas. Harold Potter, Mr. Milton D. Lowenstein.

Albert W Franklin, John E. McLaughlin, David E. Hinman, George Schelling, Beauford E. Buchanan, Carl Weinstein, Walter E. Richards, J. C. Rorison, L. D. Gardner, G. Newbold, M. Cleary, Augustus Post.

Manufacturers Aircraft Association Officers

J. K. Robinson, Jr., president of the Gallaudet Aircraft Corporation, East Greenwich, R. I., was elected president of the Manufacturers Aircraft Association, Inc., at their annual meeting, July 28. G. M. Williams, general manager of the Dayton-Wright Company, Dayton, Ohio, was elected vice-president; F. H. Russell, vice president of the Curtiss Aeroplane and Motor Corporation, Garden City, N. Y. secretary, and F. B. Rentschler, president of the Wright Aeronautical Corporation, Paterson, N. J., treasurer. In addition to these, there were elected to the Board of Directors the following: A. H. Flint, L. W. F. Engineering Co., College Point, N. Y.; I. M. Uppercu, Aeromarine Plane and Motor Co., Keyport, N. J.; Glenn L. Martin, Glenn L. Martin Co., Cleveland, O. F. L. Morse, Thomas-Morse Aircraft Corp., Ithaca, N. Y.; and Col. J. G. Vincent, Packard Motor Car Co., Detroit, Mich. S. S. Bradley was reelected general manager and assistant treasurer.

J. K. Robinson, Jr., President of Manufacturers' Aircraft, As'sn., Inc.

Pueblo Flood Photographs

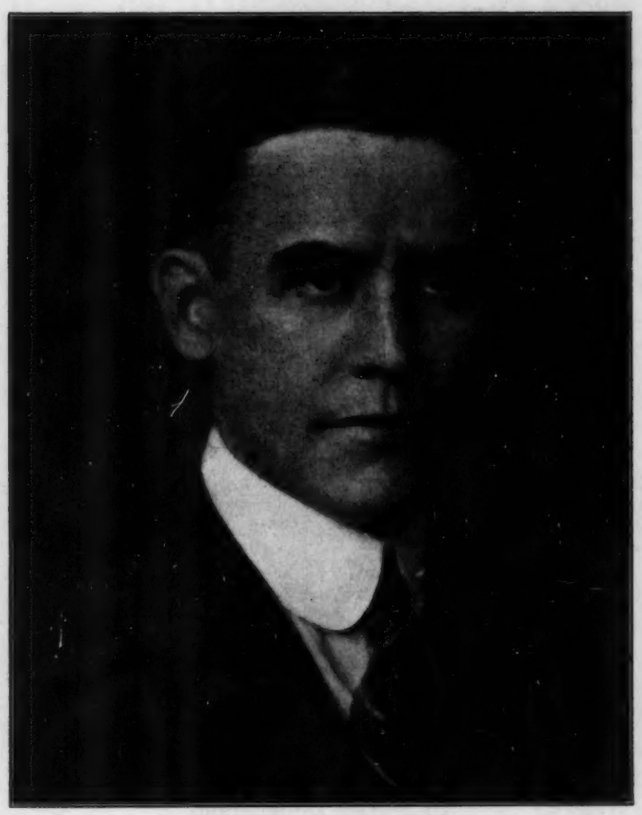
The Colorado Fuel and Iron Co. has engaged the Western Aircraft Co. to take aerial photographs of the irrigation projects and reservoirs, damaged in the flood, belonging to the former company, in and around Pueblo. E. B. Bowers, pilot, E. Johnston, agent of the aircraft company, and A. Shettle, photographer, are doing the work. Following the photography Mr. Bowers will remain at Pueblo and carry passengers over the devastated areas of the city.

Reserve Unit

Enough men have been signed up in the Air Service Reserve Unit, now organized in the east bay district, to form an airplane squadron, photographic section and balloon company, it is announced. Those signing before the lists are finally sent in will be given an earlier consideration, and all desiring to be included in the unit have been urged to send in their names at once. Lieutenant Harvey M. Pugh, A.S.A., O.R.C., has been appointed officer, and Lieutenant James Cavagnaro, A.S.A., O.R.C., is personnel officer.

Special interest has been shown by enlisted men because of the circumstance that members of the squadron will have the status of Cadets, with a corresponding opportunity to qualify as pilots and airplane observers. While no definite announcement has been made, it is believed that enlisted men in the balloon company will have similar status, qualifying them for practice with observation balloons used by the Coast Defense of San Francisco.

Applications for membership in the unit are being handled by Lieutenant Pugh, care of the Western Teachers' Exchange, Berkeley, and by Lieutenant Cavagnaro, 400 Lagunitas avenue, Oakland, Calif.



G. M. Williams, V-Pres. of Manufacturers' Aircraft As'sn., Inc.

Secretary of War and General Pershing Visit Langley Field

Secretary of War, John W. Weeks, and General Pershing, Chief of Staff, recently made the first general inspection of Langley Field since taking up their duties in the War Department.

After making an inspection of the field, which included machines, their crews and equipment, the party was given an exhibition of the machines in flight; pursuit, observation and combat formations being flown. A special demonstration of the efficiency of the new T.M. Scout was given by Lieut. Carl Cover, Engineer Officer of Langley Field.

Air Seasoning Wood

In view of the use of wood in the aircraft industry it is interesting to learn that in cooperation with the sawmills and wood utilization plants throughout the country, the Forest Products Laboratory, Madison, Wisconsin, is organizing an extensive fie'd study on the air seasoning of wood. This study, it is believed, will be of extreme interest to the lumber manufacturer and to the wood-using industries. The purpose is to determine the piling practice which will result in the fastest drying rates consistent with the least depreciation of stock, the least amount of required yard space, and the least handling costs. The study will be carried on concurrently on both hardwoods and softwoods. All the important commercial woods of the United States will eventually receive consideration.

The air seasoning of wood is an old practice. No systematic attempt has ever been made, however, to work out the exact conditions under which drying time and drying costs can be reduced to a minimum. It is not actually known which of the

PACIFIC STANDARD MODEL C1 REFERRED TO IN OUR ISSUE OF AUGUST 8

numberless methods of piling will give the quickest and the cheapest results under given climatic conditions. The new project will furnish a comparison of the effects of such piling variables as sticker heights, the spacings of boards in layers, the heights of pile foundations, and the directions of piling with relation to prevailng winds and yard alleyways.

The study is expected to decide whether from a business standpoint lumber should be dried partly at the mill and partly at the plant of utlization, or whether it should be completely dried at the mill. The data collected will also aid in showing whether air seasoning or kiln drying is the more profitable.

New Air Transport Company

The Easter Airlines, Inc., has been incorporated in Maryland. The headquarters of the company will be in Baltimore from which they intend to undertake passenger carrying, aerial survey and photography.

The president and manager of the concern is Ewing Easter, and the secretary and treasurer is Robert Strang. Other incorporators include C. I. Reynolds, E. McNeal Shannahan, George Orr, and Elliott Wheeler.

Air Service Designations

Pending the revision of Army Regulations an order issued by the Secretary of War and signed by General Pershing, Chief of Staff, states that the designation "company", as used in regulations applying to troops of Cavalry and batteries of Field Artillery, applies also to squadrons, air parks, communications sections and photo sections of the Air Service. The designation "regiment", as used in the regulations, applies also to groups of the Air Service.

Forest Fire Patrols

Secretary of War Weeks has announced that the use of Army airplanes for fire patrol in western forests will be discontinued next summer because of the large reduction now being made in appropriations permitting expenditures for only the most necessary military needs.

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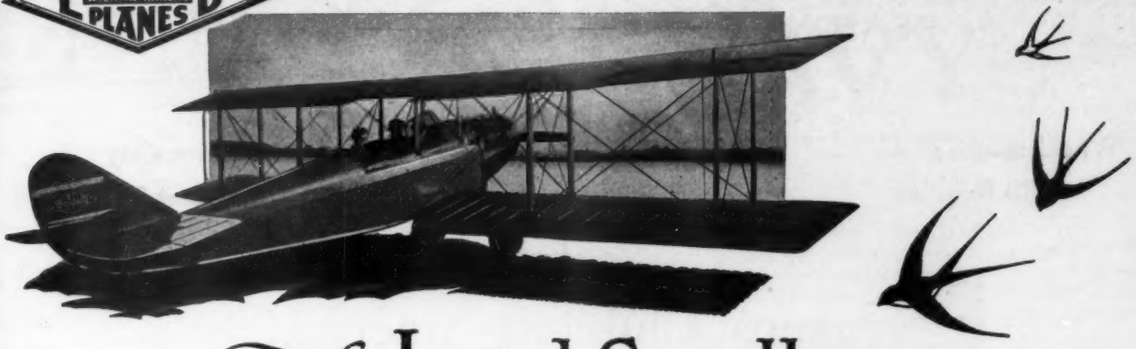

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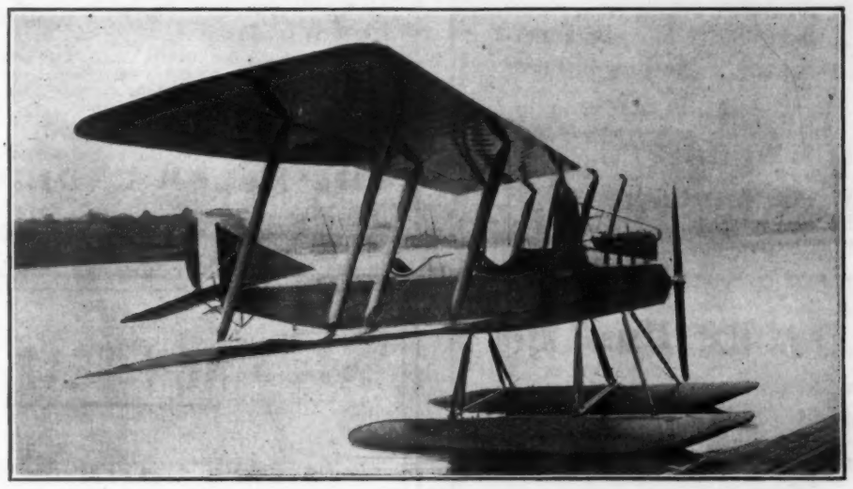

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INDEX TO ADVERTISERS

A

Aero Club of America..... 262
Aero Import Corp..... 267
Aeromarine Plane & Motor Co..... 242
Aircraft Materials & Equipment Corp..... 264
Aircraft Service Directory..... 266

B

B. G. Corporation, The..... 264

C

Curtiss Aeroplane & Motor Corp..... 246

D

Dayton Wright Co..... 244 & 264
Diamond State Fibre Co..... 265
Diggins, Ralph C., Co., The..... 264

H

Hardy, F. A..... 264
Huff, Daland & Co., Inc..... 261

L

Laird, E. M., Co..... 261
Levy, James, Aircraft Co..... 264

M

Martin, The Glenn L., Co..... 268

N

Navy Department..... 263
Non-Plate Engraving Co., The..... 264

S

Sperry, Lawrence, Aircraft Co., Inc., The..... 265

T

Thomas-Morse Aircraft Corp..... 245

W

Wellington, Sears & Co..... 264
Where to Fly..... 260
Wright Aeronautical Corp..... 243

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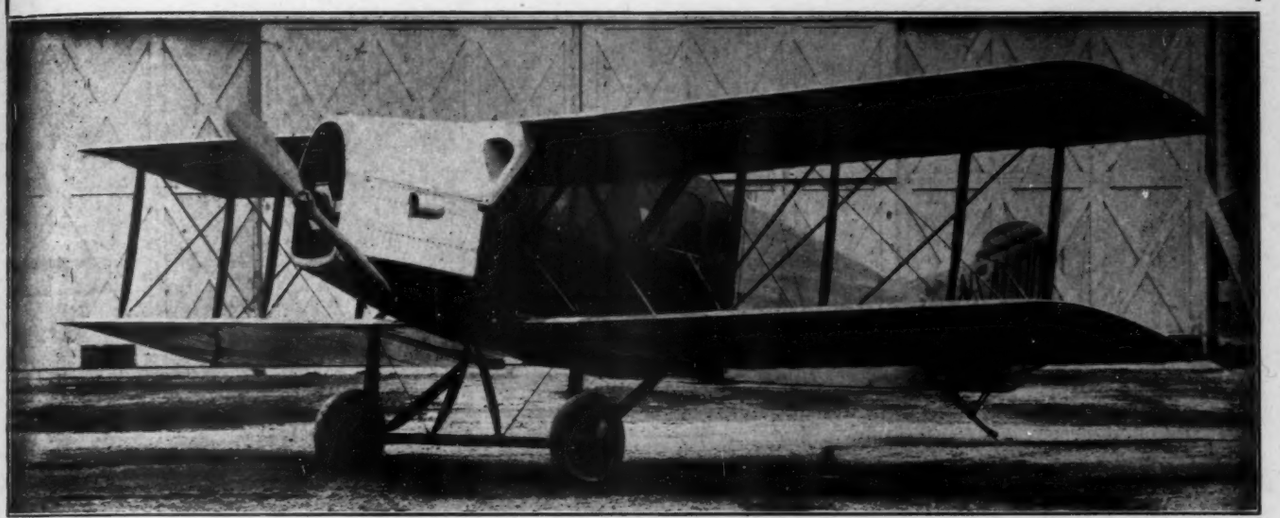

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